

Towards mastery and application – the research behind student learning

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New resources explaining how students learn, and the research behind this, have been released today by the Australian Education Research Organisation (AERO).

The 4 explainers shine a light on the hidden processes behind effective learning, providing school leaders and teachers with insights into how students learn, process and retain information. These insights can support teachers in selecting and applying the teaching practices that align best with how students learn.

The explainers have been developed in collaboration with Jason Lodge, Professor of Educational Psychology in the School of Education and Institute for Teaching and Learning Innovation at the University of Queensland, and have been reviewed by cognitive science expert Emeritus Professor John Sweller.

Each explainer summarises an element of the student learning process outlined in AERO's [*Teaching for How Students Learn: A model of learning and teaching*](#), and is supported by the associated teaching practices explained in the Model – enabling, planning, instruction and gradual release. The explainers cover the following areas:

- [Attention and focus](#) – Students are actively engaged when learning.
- [Knowledge and memory](#) – Learning is a change in long-term memory.
- [Retention and recall](#) – Students process limited amounts of new information.
- [Mastery and application](#) – Students develop and demonstrate mastery of their learning.

To develop and demonstrate mastery – students must go through important cognitive stages in memory function that allow for acquiring, retaining, retrieving and consolidating of learning.

Dr Jenny Donovan, CEO of AERO, said: 'Our brains are truly marvellous things. There is no known limit to how much knowledge we can store in our long-term memory, but there is a limit to how much new information we can manage at any one time. When we learn, changes take place in long-term memory – but to achieve this learning requires sustained focus and attention, practice, measured amounts of new information combined with the right amount of scaffolding and support for students as they move towards mastery and application.'

'These practical, evidenced-based explainers explain the pathways from short-term to long-term memory, that build the mental models students need to unlock their

capacity for higher-order thinking and a huge array of critical and creative applications. Understanding exactly how their students learn can help teachers to maximise learning within the classroom environment,' Dr Donovan concluded.

AERO's work on how students learn best connects research on the learning process with practical teaching implications.

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About Us

AERO is Australia's independent education evidence body, established in 2021 and funded by Commonwealth, state and territory governments.

Our vision is to achieve excellence and equity in education outcomes for all children and young people through effective use of evidence. AERO's role is to generate high quality evidence, make it accessible and encourage adoption and effective implementation of evidence into practice and policy.

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